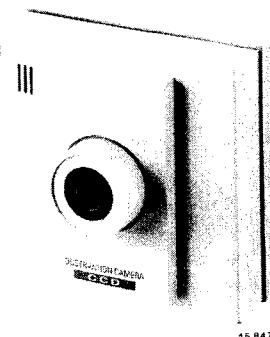


**Service
Service
Service**

Service Manual

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INTRODUCTION

This CCD Observation Camera is a black and white videocamera with a built-in electret microphone, a fixed focus lens and an RF output in TV band I (channel 3 or 4).

It is designed to work in a system with maximum 6 cameras together with a special B/W monitor.

The operating power for the camera is supplied via the coaxial cable.

The camera is suitable for limited outdoor use.

It is backwards compatible with both vidicon camera VK4902 and CCD camera CCD806/812.

TECHNICAL DATA

Supply voltage	: 9.8 - 16 Volts DC
Supply current operation	: 100 mA at 12 V. DC
stand-by	: <10 mA at 4 V. DC
Warming up time	: < 0.8 sec.
Ambient temperature	: -20°C to +55°C.
Relative humidity	: 20% - 90%
Pick-up element	: 1/3" Interline CCD VCM8120/00T/01T: LZ2324 VC81205R : LZ2314
Number of pixels	: LZ2324 : 512(H) x 582(V) LZ2314 : 512(H) x 492(V)
Horizontal resolution	: > 340 TV lines in the centre
Illumination range	: 1 to 25000 Lux.
Signal to noise ratio	: >48 dB (illum.level >100 lux).
Modulated RF output	: Channel 3 or 4 (selectable)
Modulator system	: VCM8120/00T CCIR-B VCM8120/01T CCIR-I VC81205R EIA
Microphone	: built-in electret
Lens	: fixed 3.65 mm F2.0
Focusability	: fixed 1m-infinity
Tripod fixation	: 1/4" BSW.
Dimensions	: 70(W) x 70(H) x 54(D)

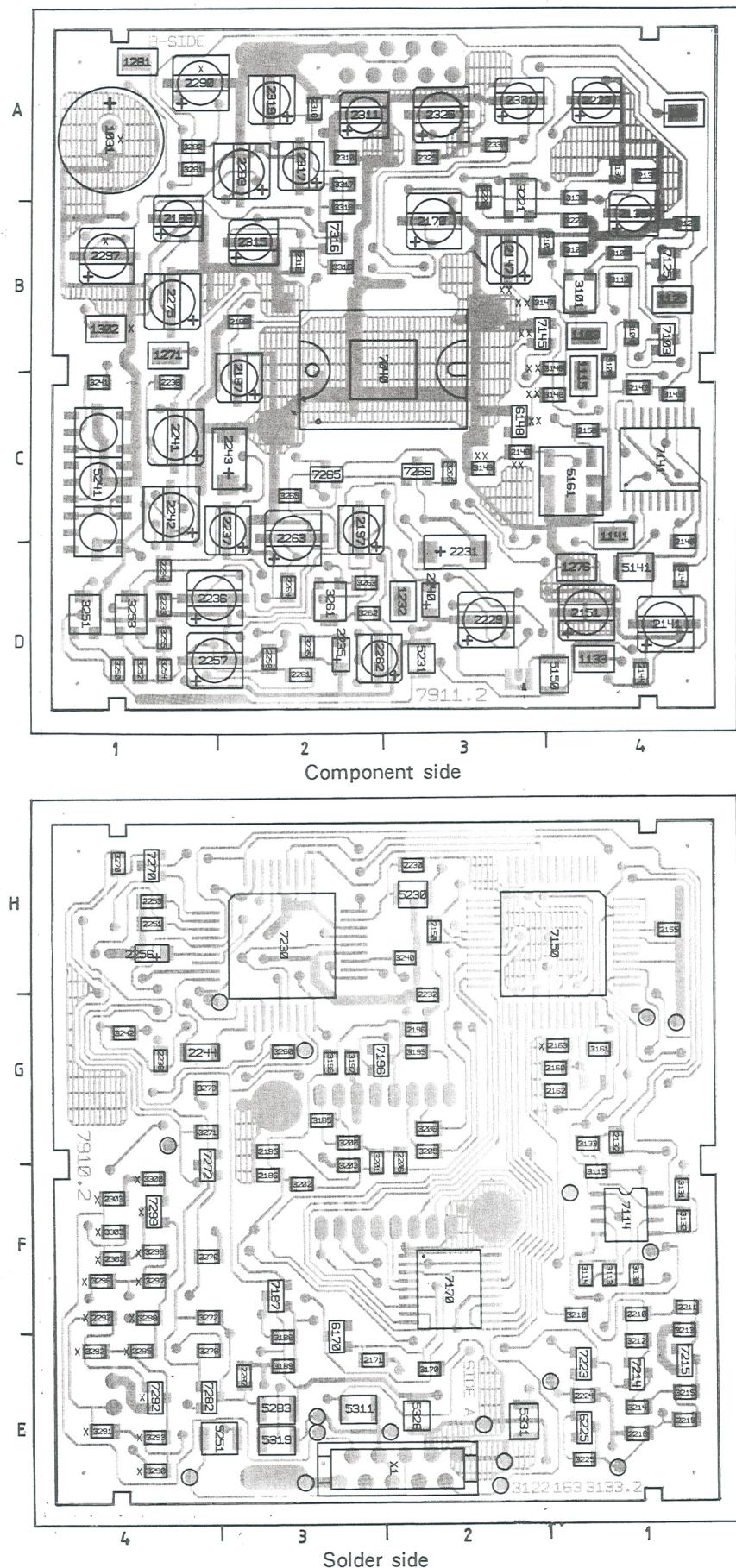
WARNINGS

1. NEVER measure directly at the output of the CCD image sensor. It will destroy the sensor immediately.
Always measure behind buffer 7196.
2. Safety regulations require that the set is restored to its original condition and that components identical to the original types be used.
3. 
All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can destroy them or reduce their lifetime drastically. When repairing, make sure that you are connected to the same potential as the mass of the set. Also keep tools at that potential.
4. Always switch the set off before replacing any of the components or separating the PCboards.

REMARKS

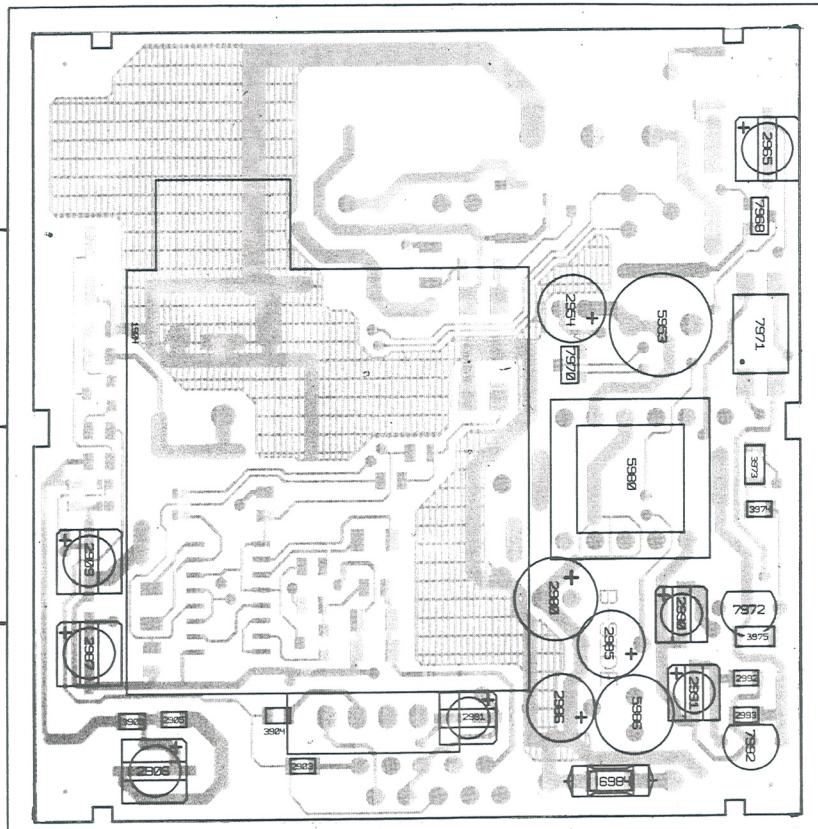
1. The values of resistors and capacitors are given without decimal point. e.g. 3k9. Please read 3.9k.

WIRING DIAGRAM PROCESSING PANEL



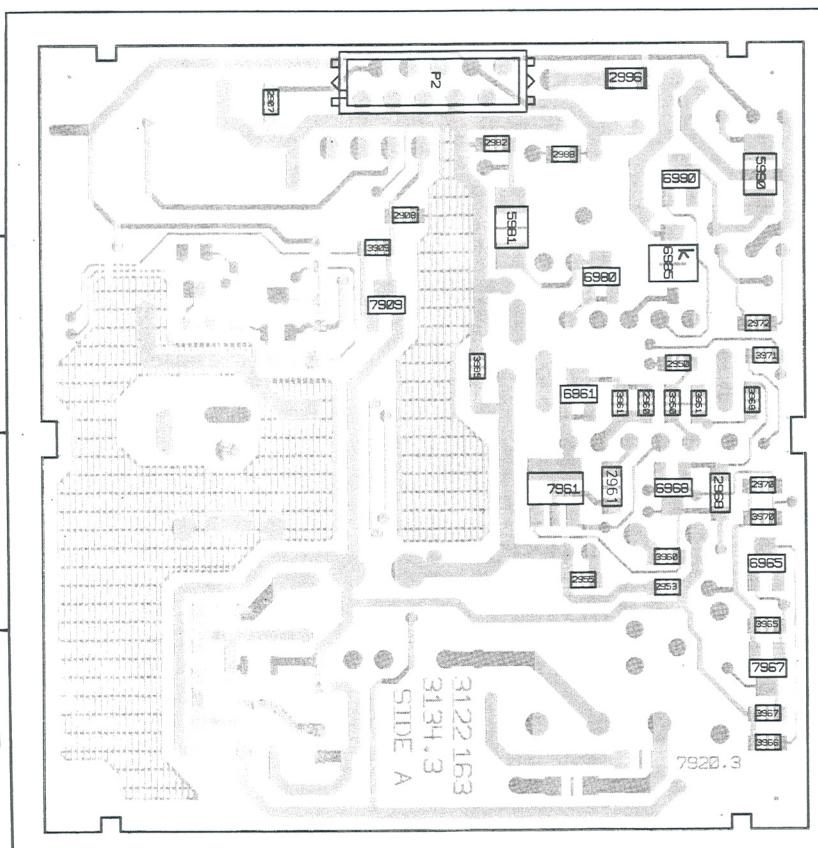
NOTE: This lay-out is applicable for both VCM81 & VCM61.
Thus, some components mentioned **may not** be present on the panels

1031	A1	3136	B4
1103	B4	3137	A4
1115	C4	3143	C4
1123	B4	3144	D4
1133	D4	3145	B3
1141	C4	3146	C4
1216	A4	3147	B3
1232	D3	3149	C3
1271	B1	3161	G1
1276	D4	3170	E2
1281	A1	3185	G3
1302	B1	3188	E3
2102	B3	3189	E3
2132	G1	3195	G2
2135	B4	3196	G3
2136	A4	3197	G3
2140	C4	3200	G3
2141	D4	3201	G3
2143	C4	3202	F3
2144	D4	3203	F3
2147	B3	3205	G2
2148	C3	3206	G2
2150	H2	3210	F1
2151	D4	3212	E1
2155	H1	3213	F1
2156	C4	3214	E1
2160	G2	3215	E1
2162	G2	3220	A3
2163	G2	3221	A3
2170	A3	3222	B4
2171	E3	3225	E1
2180	B2	3235	D2
2185	G3	3240	H2
2186	F3	3241	C1
2187	B2	3250	D1
2188	A1	3251	D1
2196	G2	3252	D1
2197	C2	3253	D1
2206	F2	3254	D1
2210	F1	3255	D1
2211	F1	3260	G3
2215	E1	3261	D2
2216	E1	3262	D2
2223	A4	3263	G2
2224	E1	3265	C2
2229	D3	3266	C3
2230	H2	3270	H4
2231	D3	3271	G4
2232	G2'	3272	F4
2233	D1	3273	G4
2234	D1	3276	E4
2235	D2	3281	A1
2236	D1	3282	A1
2237	C2	3290	E4
2238	C1	3291	E4
2239	G4	3292	E4
2240	D3	3293	E4
2241	C1	3296	F4
2242	C1	3297	F4
2243	C1	3298	F4
2244	G4	3299	F4
2251	H4	3300	F4
2253	H4	3303	F4
2256	H4	3316	B2
2257	D1	3317	A2
2258	D2	3318	B2
2261	D2	5141	D4
2262	D2	5150	D4
2263	C2	5161	C4
2264	D2	5230	H2
2275	B1	5231	D3
2276	F4	5241	C1
2282	E3	5251	E1
2283	A2	5283	E3
2290	A1	5311	E3
2292	F4	5319	E3
2295	E4	5326	E2
2297	B1	5331	E2
2302	F4	6148	C3
2303	F4	6170	E3
2310	A2	6225	E1
2311	A2	7040	C2
2315	B2	7103	B4
2316	B2	7114	F1
2317	A2	7125	B4
2318	A2	7141	C4
2319	A2	7145	B4
2325	A3	7150	H1
2326	A3	7170	F2
2330	A3	7187	F3
2331	A3	7196	G2
3100	B4	7214	E1
3101	B4	7215	E1
3102	B4	7223	E1
3104	B4	7230	H3
3105	B4	7265	C2
3112	B4	7266	C3
3113	F1	7270	H4
3114	F1	7272	F4
3115	F1	7282	E4
3123	F1	7292	E4
3124	F1	7299	F4
3125	B4	7316	B2
3130	F1		
3131	F1		
3132	F1		
3133	G1		



Component side

1904	C2
2903	A3
2905	A4
2906	A4
2907	E2
2908	E2
2909	B4
2950	F4
2953	G4
2954	C2
2955	G3
2960	F4
2961	G3
2965	D1
2968	G4
2970	G4
2972	F4
2980	A2
2981	A2
2982	E3
2985	A1
2986	A2
2987	A4
2988	E3
2990	A1
2991	A1
2992	A1
2993	A1
2996	E4
3904	A3
3905	A4
3950	F4
3951	F4
3960	G4
3961	F3
3965	G4
3966	H4
3967	H4
3968	F4
3970	G4
3971	F4
3973	B1
3974	B1
3975	A1
3995	F3
5953	C1
5980	C1
5981	E3
5986	A1
5990	E4
6961	F3
6965	G4
6968	G4
6980	F3
6985	F4
6990	E4
7909	F2
7961	G3
7967	G4
7968	C1
7970	C1
7971	C1
7972	B1
7992	A1



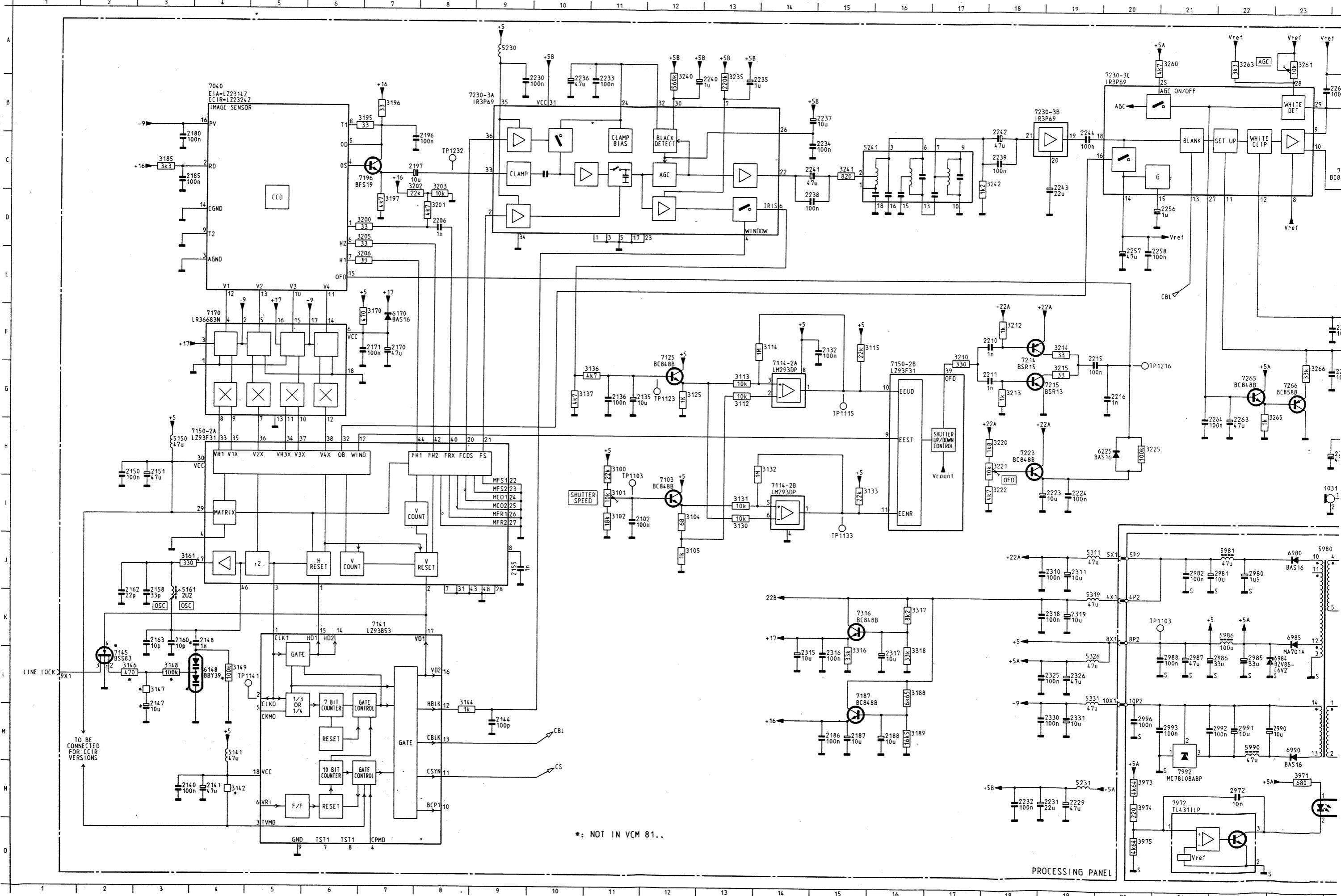
Solder side

NOTE: 7972 and 7992 have to be bent away.

CIRCUIT DIAGRAM

VCM81.. 5.1 5.2 VCM81..

CIRCUIT



5.1

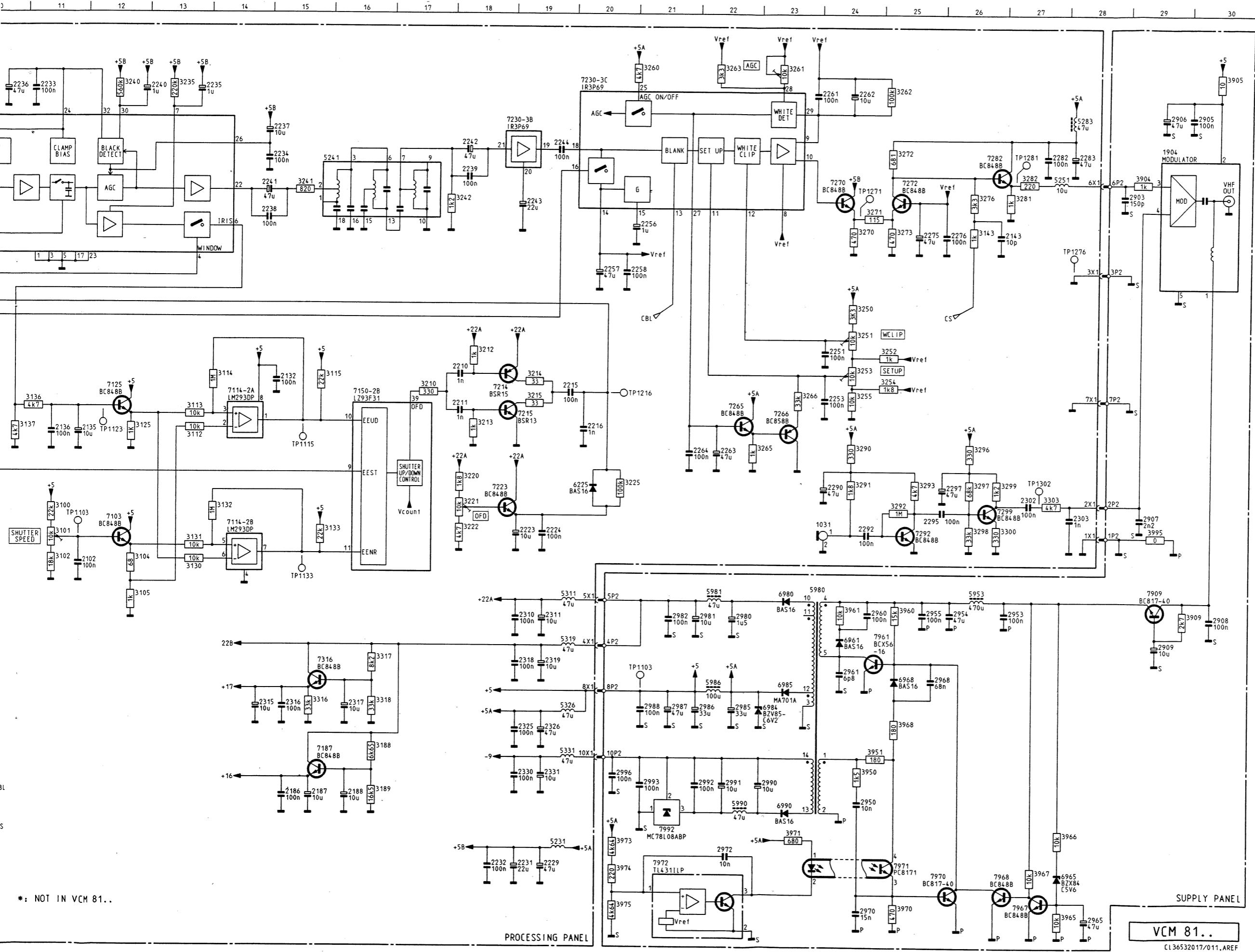
5.2

VCM81..

CIRCUIT DIAGRAM

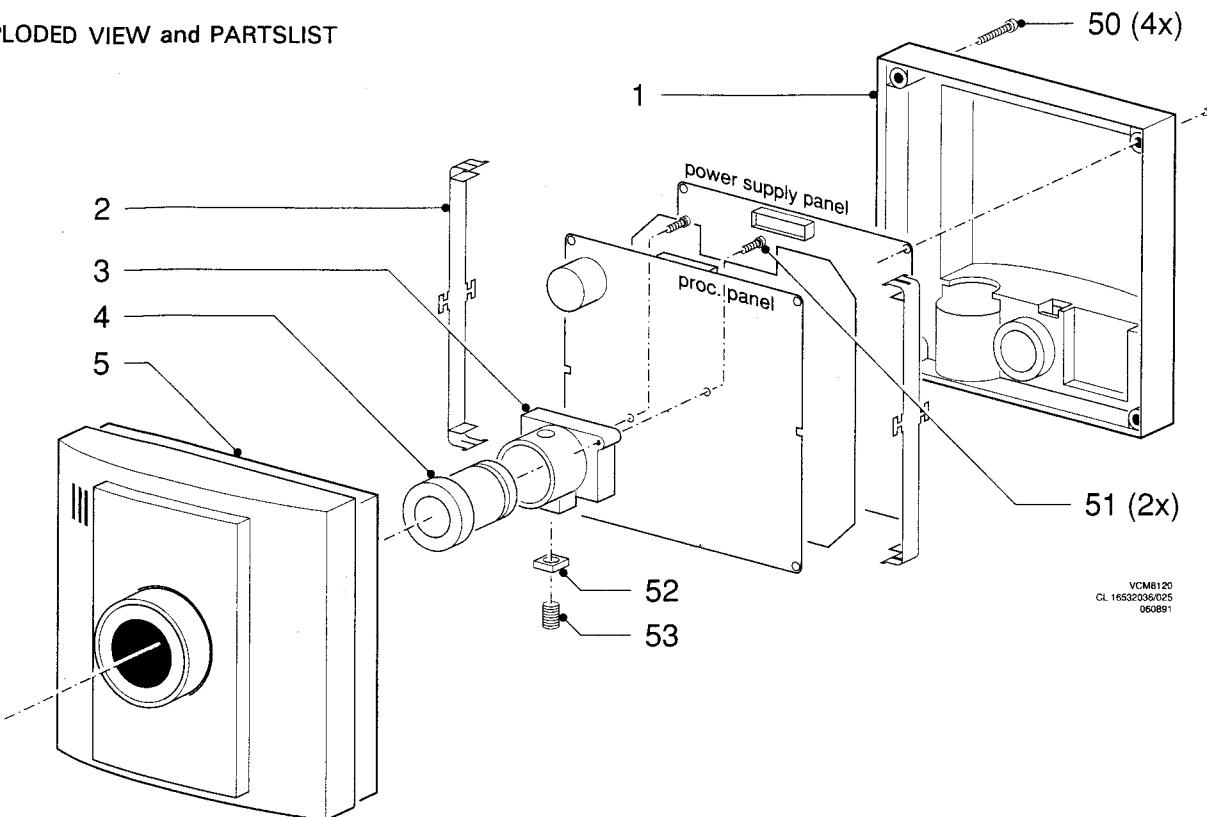
VCM81..

5.3



A	1031	I24	3114	F14	6984	L23
	1904	I29	3115	F15	6985	K23
	2102	I11	3125	G12	6990	M23
	2132	F15	3130	I13	7040	B 4
	2135	G11	3131	I13	7103	I12
	2136	G11	3132	H14	7114	G14
	2143	D26	3137	G11	7125	F12
	2144	M 9	3142	N 4	7145	K 7
	2147	M 3	3143	D26	7150	G16
	2148	K 4	3144	M 8	7150	H 4
	2150	K 2	3146	L 2	7170	F 4
	2151	H 3	3147	L 3	7187	L15
	2155	J 9	3148	L 3	7196	C 7
	2158	K 3	3149	L 4	7214	F18
	2160	K 3	3161	J 3	7215	G19
	2162	K 2	3170	F 7	7223	H18
	2163	K 3	3185	C 3	7230	B 9
	2170	F 7	3188	L16	7230	B18
	2171	F 7	3189	M16	7230	A20
	2180	C 3	3195	B 7	7265	G22
	2185	C 3	3196	B 7	7266	G23
	2186	M15	3197	D 7	7270	C24
	2187	M15	3200	D 7	7272	C25
	2188	M16	3201	D 8	7282	C26
	2196	C 8	3202	C 7	7292	I25
	2197	C 7	3203	C 8	7299	H26
	2206	D 8	3205	D 7	7316	K15
	2210	F18	3206	E 7	7909	J29
	2211	G18	3210	F 17	7961	J24
	2215	F19	3212	F 18	7967	O27
	2216	G20	3213	G18	7968	N27
	2223	I19	3214	F19	7970	N25
	2224	I19	3215	G19	7971	N25
	2229	N19	3220	H18	7972	N21
	2230	B 9	3221	H18	7992	M21
	2231	N19	3222	I18		
	2232	N18	3225	H20		
	2233	B11	3235	A13		
	2234	C15	3240	A12		
	2235	B13	3241	C15		
	2236	B10	3242	C18		
	2237	B15	3250	E24		
	2238	D14	3251	E24		
	2239	C18	3252	F25		
	2240	B13	3253	F24		
	2241	C14	3254	F25		
	2242	B18	3255	F24		
	2243	C19	3260	A21		
	2244	B19	3261	A23		
	2251	F24	3262	A25		
	2256	G24	3263	A22		
	2257	D21	3265	G22		
	2258	E20	3270	F23		
	2261	B23	3271	D24		
	2262	B24	3272	B25		
	2263	G22	3273	D25		
	2264	G21	3276	C26		
	2265	D25	3281	C27		
	2266	D26	3282	C27		
	2267	D27	3283	C27		
	2268	D28	3284	C27		
	2269	D29	3285	C27		
	2270	D30	3286	C27		
	2271	D31	3287	C27		
	2272	D32	3288	C27		
	2273	D33	3289	C27		
	2274	D34	3290	C27		
	2275	D35	3291	C27		
	2276	D36	3292	C27		
	2277	D37	3293	C27		
	2278	D38	3294	C27		
	2279	D39	3295	C27		
	2280	D40	3296	C27		
	2281	D41	3297	C27		
	2282	D42	3298	C27		
	2283	D43	3299	C27		
	2284	D44	3300	C27		
	2285	D45	3301	C27		
	2286	D46	3302	C27		
	2287	D47	3303	C27		
	2288	D48	3304	C27		
	2289	D49	3305	C27		
	2290	D50	3306	C27		
	2291	D51	3307	C27		
	2292	D52	3308	C27		
	2293	D53	3309	C27		
	2294	D54	3310	C27		
	2295	D55	3311	C27		
	2296	D56	3312	C27		
	2297	D57	3313	C27		
	2298	D58	3314	C27		
	2299	D59	3315	C27		
	2300	D60	3316	C27		
	2301	D61	3317	C27		
	2302	D62	3318	C27		
	2303	D63	3319	C27		
	2304	D64	3320	C27		
	2305	D65	3321	C27		
	2306	D66	3322	C27		
	2307	D67	3323	C27		
	2308	D68	3324	C27		
	2309	D69	3325	C27		
	2310	D70	3326	C27		
	2311	D71	3327	C27		
	2312	D72	3328	C27		
	2313	D73	3329	C27		
	2314	D74	3330	C27		
	2315	D75	3331	C27		
	2316	D76	3332	C27		
	2317	D77	3333	C27		
	2318	D78	3334	C27		
	2319	D79	3335	C27		
	2320	D80	3336	C27		
	2321	D81	3337	C27		
	2322	D82	3338	C27		
	2323	D83	3339	C27		
	2324	D84	3340	C27		
	2325	D85	3341	C27		
	2326	D86	3342	C27		
	2327	D87	3343	C27		
	2328	D88	3344	C27		
	2329	D89	3345	C27		
	2330	D90	3346	C27		
	2331	D91	3347	C27		
	2332	D92	3348	C27		
	2333	D93	3349	C27		
	2334	D94	3350	C27		
	2335	D95	3351	C27		
	2336	D96	3352	C27		
	2337	D97	3353	C27		
	2338	D98	3354	C27		
	2339	D99	3355	C27		
	2340	D100	3356	C27		
	2341	D101	3357	C27		
	2342	D102	3358	C27		
	2343	D103	3359	C27		
	2344	D104	3360	C27		
	2345	D105	3361	C27		
	2346	D106	3362	C27		
	2347	D107	3363	C27		
	2348	D108	3364	C27		
	2349	D109				

EXPLODED VIEW and PARTSLIST



4822 462 10507	Tripod assy
	/00/01T
4822 462 10516	Tripod assy /05R
4822 502 21314	Screw for tripod
4822 505 10665	Lock nut M5
4822 321 61405	Coax conn. cable
4822 264 10233	Male coax plug
4822 267 31424	Fem. coax socket
4822 736 52646	DFU /00T/01T
4822 736 52817	DFU /05R
4822 310 32045	Extension board
4822 395 50426	Trimming tool SMD
1 4822 432 60621	Housing back /00T/01T
1 4822 432 60678	Housing back /05R
2 4822 466 93052	Spacer
3 4822 256 80074	Lens Holder
4 4822 381 11291	Lens 3.6 mm
5 4822 432 60619	Housing front /00T/01T
5 4822 432 60681	Housing front /05R
50 4822 502 13887	Torx screw 2x20
51 4822 502 13886	Torx screw 2x5
52 4822 505 10635	Square nut
53 4822 502 10176	Screw M3x5

Various

1020 4822 212 30438	Proc. PCB assy
	00/01T
1020 4822 212 30439	Proc. PCB assy 05R
1021 4822 214 33474	Power board /00T
1021 4822 214 33536	Power board /01T
1021 4822 214 33475	Power board /05R
1031 4822 242 30176	Microphone
1035 4822 212 10232	Proc. panel
1103 4822 404 60717	Test clip chip
1115 4822 404 60717	Test clip chip
1123 4822 404 60717	Test clip chip
1133 4822 404 60717	Test clip chip
1141 4822 404 60717	Test clip chip

1216 4822 404 60717	Test clip chip
1232 4822 404 60717	Test clip chip
1271 4822 404 60717	Test clip chip
1276 4822 404 60717	Test clip chip
1281 4822 404 60717	Test clip chip
1302 4822 404 60717	Test clip chip
X1 5322 265 40903	Connector 10p
P2 4822 265 41281	Connector 10p

Modulator

1904 4822 214 33469 Modulator /00T

1904 4822 214 33535 Modulator /01T

1904 4822 214 33468 Modulator /05R

Capacitors

2102 4822 126 10002 100nF 20% 25V

2132 4822 126 10002 100nF 20% 25V

2135 4822 124 23982 10μF 20% 25V

2136 4822 126 10002 100nF 20% 25V

2140 4822 126 10002 100nF +80/-20%

2141 4822 124 23981 47μF 20% 6.3V

2143 5322 122 32448 10pF 5% 50V

2144 5322 122 32531 100pF 5% 50V

2150 4822 126 10002 100nF 20% 25V

2151 4822 124 23981 47μF 20% 6.3V

2155 5322 122 34123 1nF 10% 50V

2158 5322 122 32659 33pF 5% 50V

2160 5322 122 32448 10pF 5% 50V

2162 4822 122 33981 22pF 5%

2163 5322 122 32448 10pF 5% 50V

2170 4822 124 23981 47μF 20% 6.3V

2171 4822 126 10002 100nF 20% 25V

2180 4822 126 10002 100nF 20% 25V

2185 4822 126 10002 100nF 20% 25V

2186 4822 126 10002 100nF 20% 25V

2187 4822 124 23982 10μF 20% 25V

2188 4822 124 23982 10μF 20% 25V

2196 4822 126 10002 100nF 20% 25V

2197 4822 124 23982 10μF 20% 25V

2206 5322 122 34123 1nF 10% 50V

2210 5322 122 34123 1nF 10% 50V

2211 5322 122 34123 1nF 10% 50V

2215 4822 126 10002 100nF 20% 25V

2216 5322 122 34123 1nF 10% 50V

2223 4822 124 23982 10μF 20% 25V

2224 4822 126 10002 100nF 20% 25V

2229 4822 124 23981 47μF 20% 6.3V

2230 4822 126 10002 100nF 20% 25V

2231 4822 126 11216 22μF 20% 6.3V

2232 4822 126 10002 100nF 20% 25V

2233 4822 126 10002 100nF 20% 25V

2234 4822 126 10002 100nF 20% 25V

2235 4822 126 11219 1μF 20% 16V

2236 4822 124 23981 47μF 20% 6.3V

2237 4822 124 23982 10μF 20% 25V

2238 4822 126 10002 100nF 20% 25V

2239 4822 126 10002 100nF 20% 25V

2240 4822 126 11219 1μF 20% 16V

2241 4822 124 23981 47μF 20% 6.3V

2242 4822 124 23981 47μF 20% 6.3V

2243 4822 126 11216 22μF 20% 6.3V

2244 4822 122 33496 100nF 10% 63V

2251 4822 126 10002 100nF 20% 25V

2253 4822 126 10002 100nF 20% 25V

2256 4822 126 11219 1μF 20% 16V

2257 4822 124 23981 47μF 20% 6.3V

2258 4822 126 10002 100nF 20% 25V

2261 4822 126 10002 100nF 20% 25V

2262 4822 124 23982 10μF 20% 25V

2263 4822 124 23981 47μF 20% 6.3V

2264 4822 126 10002 100nF 20% 25V

2275 4822 124 23981 47μF 20% 6.3V

2276 4822 126 10002 100nF 20% 25V

2282 4822 126 10002 100nF 20% 25V

2283 4822 124 23981 47μF 20% 6.3V

2290 4822 124 23981 47μF 20% 6.3V

2292 4822 126 10002 100nF 20% 25V

2295 4822 126 10002 100nF 20% 25V

<p>2297 4822 124 23981 47μF 20% 6.3V 2302 4822 126 10002 100nF 20% 25V 2303 5322 122 34123 1nF 10% 50V 2310 4822 126 10002 100nF 20% 25V 2311 4822 124 23982 10μF 20% 25V 2315 4822 124 23982 10μF 20% 25V 2316 4822 126 10002 100nF 20% 25V 2317 4822 124 23982 10μF 20% 25V 2318 4822 126 10002 100nF 20% 25V 2319 4822 124 23982 10μF 20% 25V 2325 4822 126 10002 100nF 20% 25V 2326 4822 124 23981 47μF 20% 6.3V 2330 4822 126 10002 100nF 20% 25V 2331 4822 124 23982 10μF 20% 25V 2903 5322 122 33538 150pF 5% NPO 2905 4822 126 10002 100nF +80/-20% 2906 4822 124 23981 47μF 20% 6.3V 2907 4822 122 33127 2n2 10% x7R 2908 4822 126 10002 100nF +80/-20% 2909 4822 124 23982 10μF 20% 25V 2950 5322 122 34098 10nF 10% X7R 2953 4822 126 10002 100nF +80/-20% 2954 4822 124 40433 470μF 25V 2955 4822 126 10002 100nF +80/-20% 2960 4822 126 10002 100nF +80/-20% 2961 4822 122 32507 6.8pF 5% 50V 2965 4822 124 23981 47μF 20% 6.3V 2968 4822 122 32891 68nF 10% 2970 4822 122 33128 15nF 10% X7R 2972 5322 122 34098 10nF 10% X7R 2980 4822 124 23979 1.5μF 20% 25V 2981 4822 124 23982 10μF 20% 25V 2982 4822 126 10002 100nF +80/-20% 2985 4822 124 23795 33μF 10% 6.3V 2986 4822 124 23795 33μF 10% 6.3V 2987 4822 124 23981 47μF 20% 6.3V 2988 4822 126 10002 100nF +80/-20% 2990 4822 124 23982 10μF 25V 2991 4822 124 23982 10μF 25V 2992 4822 126 10002 100nF +80/-20% 2993 4822 126 10002 100nF +80/-20% 2996 4822 122 33496 100nF 63V</p> <hr/> <p>Resistor</p> <p>3100 4822 051 20223 22k 5% 0,1W 3101 4822 100 11663 10k 3102 4822 051 20183 18k 5% 0,1W 3104 4822 051 20689 68Ω 5% 0,1W 3105 4822 051 20102 1k 5% 0,1W 3112 4822 051 20103 10k 5% 0,1W 3113 4822 051 20103 10k 5% 0,1W 3114 4822 051 20105 1M 5% 0,1W 3115 4822 051 20223 22k 5% 0,1W 3124 4822 111 91536 3125 4822 051 20102 1k 5% 0,1W 3130 4822 051 20103 10k 5% 0,1W 3131 4822 051 20103 10k 5% 0,1W 3132 4822 051 20105 1M 5% 0,1W 3133 4822 051 20223 22k 5% 0,1W 3136 4822 051 20472 4k7 5% 0,1W 3137 4822 051 20472 4k7 5% 0,1W 3143 4822 051 20102 1k 5% 0,1W 3144 4822 051 20102 1k 5% 0,1W 3155 4822 111 91536 3161 4822 051 20331 330Ω 5% 0,1W 3170 4822 051 20471 470Ω 5% 0,1W 3185 4822 051 20332 3k3 5% 0,1W 3188 4822 116 83479 6k 65 1% 3189 4822 116 83481 16k 5 3195 4822 051 20339 33Ω 5% 0,1W</p>	<p>3196 4822 051 20339 33Ω 5% 0,1W 3197 4822 051 20472 4k7 5% 0,1W 3200 4822 051 20339 33Ω 5% 0,1W 3201 4822 051 20472 4k7 5% 0,1W 3202 4822 051 20223 22k 5% 0,1W 3203 4822 051 20103 10k 5% 0,1W 3205 4822 051 20339 33Ω 5% 0,1W 3206 4822 051 20339 33Ω 5% 0,1W 3210 4822 051 20331 330Ω 5% 0,1W 3212 4822 051 20102 1k 5% 0,1W 3213 4822 051 20102 1k 5% 0,1W 3214 4822 051 20339 33Ω 5% 0,1W 3215 4822 051 20339 33Ω 5% 0,1W 3220 4822 051 20182 1k8 5% 0,1W 3221 4822 100 11663 10k potm. 3222 4822 051 20472 4k7 5% 0,1W 3225 4822 051 20104 100k 5% 0,1W 3235 4822 051 20224 220k 5% 0,1W 3240 4822 051 20564 560k 5% 0,1W 3241 4822 051 20821 820Ω 5% 0,1W 3242 4822 051 20122 1k2 5% 0,1W 3250 4822 051 20332 3k3 5% 0,1W 3251 4822 100 11663 10k potm. 3252 4822 051 20102 1k 5% 0,1W 3253 4822 100 11663 10k potm. 3254 4822 051 20182 1k8 5% 0,1W 3255 4822 051 20103 10k 5% 0,1W 3260 4822 051 20472 4k7 5% 0,1W 3261 4822 100 11663 10k potm. 3262 4822 051 20104 100k 5% 0,1W 3263 4822 051 20332 3k3 5% 0,1W 3265 4822 051 20102 1k 5% 0,1W 3266 4822 051 20333 33k 5% 0,1W 3270 4822 051 20471 470Ω 5% 0,1W 3271 4822 116 83482 115Q 1% 3272 4822 116 83483 681Ω 1% 3273 4822 051 20471 470Ω 5% 0,1W 3276 4822 051 20332 3k3 5% 0,1W 3281 4822 051 20102 1k 5% 0,1W 3282 4822 051 20221 220Ω 5% 0,1W 3290 4822 051 20331 330Ω 5% 0,1W 3291 4822 051 20182 1k8 5% 0,1W 3292 4822 051 20105 1M 5% 0,1W 3293 4822 051 20472 4k7 5% 0,1W 3296 4822 051 20331 330Ω 5% 0,1W 3297 4822 051 20683 68k 5% 0,1W 3298 4822 051 20333 33k 5% 0,1W 3299 4822 051 20122 1k2 5% 0,1W 3300 4822 05</p>
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